



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/719,341	09/25/1996	SEETHARAMAIAH MANNAVA	13DV-12522	9351

27622 7590 02/11/2004

STEVEN J. ROSEN
4729 CORNELL ROAD
CINCINNATI, OH 45241

EXAMINER

VERDIER, CHRISTOPHER M

ART UNIT PAPER NUMBER

3745

DATE MAILED: 02/11/2004

39

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

08/719,341

Applicant(s)

MANNAVA ET AL.

Examiner

Christopher Verdier

Art Unit

3745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 March 1995 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Art Unit: 3745

Upon remand of this application from the Board of Patent Appeals and Interferences to consider whether the rejection of claims 1-20 under the judicially created doctrine of double patenting over claim 1 of U.S. Patent 5,531,570 based on *In re Schneller* is still appropriate in view of MPEP 804, it has been determined that the above rejection is no longer appropriate. A new obviousness type double patenting rejection based on U.S. Patent 5,531,570 is set forth later below. The previous rejection of claims 1-20 under the judicially created doctrine of double patenting over claim 1 of U.S. Patent 5,531,570 based on *In re Schneller* is hereby withdrawn.

Declaration Under 37 CFR 1.131

The declaration filed on February 4, 1999 under 37 CFR 1.131 has been considered but is ineffective to overcome the Mannava 5,591,009 reference.

The Mannava 5,591,009 reference is a U.S. patent that claims the rejected invention. An affidavit or declaration is inappropriate under 37 CFR 1.131(a) when the patent is claiming the same patentable invention, see MPEP § 2306. Note that the same patentable invention is defined in MPEP 715.05 as when the invention is considered obvious under 35 USC 103. The specification limitation in the instant application of the peening depth of 20 to 50 mils is considered obvious.

Art Unit: 3745

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mannava '009 in view of Neal and Mallozzi 3,850,698. Mannava '009 discloses a repaired laser shock peened gas turbine engine component substantially as claimed, but does not disclose that the component is a compressor blade, and does not disclose that the laser shock peening spots are at a power density of 100-200 Joules per square centimeter.

Neal (column 2, lines 65-68) teaches compressor blades may be peened for the purpose of reducing compressor blade fatigue.

Art Unit: 3745

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize the repaired laser shock peened gas turbine engine component of Mannava for the compressor blades as taught by Neal for the purpose of reducing compressor blade fatigue.

Mallozzi '698 (figure 1 and column 5, lines 23-26) teaches that laser shock peening of a surface may occur at a power density of between 10 to 10,000 Joules per square centimeter, for the purpose of improving hardness and strength.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to perform the laser shock peening at a power density of 100-200 Joules per square centimeter, as taught by Mallozzi '698, for the purpose of improving hardness and strength.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Art Unit: 3745

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 16, 17, and 18 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 1, 3, 1, 3, 1, 1, 3, 1, 1, 3, 1, 1, and 3 of U.S. Patent No. 5,591,009 in view of Neal and Mallozzi 3,850,698. Claims 1 and 3 of US Patent '009 claim substantially the same subject matter as the instant application except for the gas turbine engine component being a compressor blade, and except for the laser shock peening spots being at a power density of 100-200 Joules per square centimeter.

Neal (column 2, lines 65-68) teaches compressor blades may be peened for the purpose of reducing compressor blade fatigue.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the gas turbine engine component of Mannava as the compressor blades as taught by Neal for the purpose of reducing compressor blade fatigue.

Mallozzi '698 (figure 1 and column 5, lines 23-26) teaches that laser shock peening of a surface may occur at a power density of between 10 to 10,000 Joules per square centimeter, for the purpose of improving hardness and strength.

Art Unit: 3745

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to perform the laser shock peening at a power density of 100-200 Joules per square centimeter, as taught by Mallozzi '698, for the purpose of improving hardness and strength.

Claims 9-10, 14-15, and 19-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 4, 4, 4, 4, 4, and 4, respectively, of U.S. Patent No. 5,591,009 in view of Neal and Mallozzi 3,850,698. Claim 4 of US Patent '009 claims substantially the same subject matter as the instant application except for the gas turbine engine component being a compressor blade, and except for the laser shock peening spots being at a power density of 100-200 Joules per square centimeter.

Neal (column 2, lines 65-68) teaches compressor blades may be peened for the purpose of reducing compressor blade fatigue.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the gas turbine engine component of Mannava as the compressor blades as taught by Neal for the purpose of reducing compressor blade fatigue.

Mallozzi '698 (figure 1 and column 5, lines 23-26) teaches that laser shock peening of a surface may occur at a power density of between 10 to 10,000 Joules per square centimeter, for the purpose of improving hardness and strength.

Art Unit: 3745

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to perform the laser shock peening at a power density of 100-200 Joules per square centimeter, as taught by Mallozzi '698, for the purpose of improving hardness and strength.

Claims 1, 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 15, 16, 17, and 18 are also rejected under the judicially created doctrine of double patenting over claims 2, 2, 4, 2, 4, 2, 2, 4, 1, 2, 4, 5, 2, 2, and 4, respectively, of U. S. Patent No. 5,531,570 in view of Mallozzi '698. Claims 2, 4, and 5 of U.S. Patent 5,531,570 claim substantially the same subject matter as claims 1, 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 15, 16, 17, and 18 of the instant application, including a gas turbine engine compressor blade comprising a metallic airfoil with a leading edge, a trailing edge, a pressure side, a suction side, and laser shock peened surfaces on a leading edge pressure side, a leading edge suction side, and trailing edge pressure side, and a trailing edge suction side, with the laser shock peened surfaces extending radially along the leading and trailing edges and chordwise from the leading and trailing edges, with each laser shock peened surface causing respective first, second, third, and fourth regions having deep compressive residual stresses imparted by the laser shock peening extending into the airfoil from the laser shock peened surface, with the laser shock peened regions being formed by simultaneously laser shock peening both sides of the airfoil, with the compressor blade being a repaired compressor blade, but do not claim that the deep compressive residual stresses are formed with focused laser beam spots on the laser shock

Art Unit: 3745

peened surfaces, with the laser shock peening spots being at a power density of 100-200 Joules per square centimeter.

Mallozzi '698 (figure 1 and column 5, lines 23-26) teaches that laser shock peening of a surface may occur via focused laser beam spots at a power density of between 10 to 10,000 Joules per square centimeter, for the purpose of improving hardness and strength.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to perform the laser shock peening at a power density of 100-200 Joules per square centimeter, as taught by Mallozzi '698, for the purpose of improving hardness and strength. With regard to the additional element recited in claims 2, 4, and 5 of U.S. Patent 5,531,570 of the means to counter distortion of the airfoil due to the laser shock peening, it would have been further obvious at the time the invention was made to a person having ordinary skill in the art to eliminate this feature from the claims, for the purpose of reducing costs and providing overall simplification.

Claims 9, 10, 14, and 19-20 are rejected under the judicially created doctrine of double patenting over claims 4, 2, 4, 4, and 2, respectively, of U. S. Patent No. 5,531,570 and Mallozzi '698 as set forth above, and further in view of Mannava 5,591,009. The modified gas turbine engine compressor blade shows all of the claimed subject matter except for the compressor blade being a repaired compressor blade.

Art Unit: 3745

Mannava '009 (column 2, lines 35-37 and figures 2-3) teaches that laser shock peening may be used on repaired fan blades, for the purpose of saving money by not requiring new replacement blades.

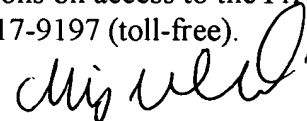
It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to perform the laser shock peening on a repaired blade, as taught by Mannava '009, for the purpose of saving money by not requiring new replacement blades. Although Mannava '009 is directed towards fan blades, one of ordinary skill in the art would have recognized the applicability of the teachings of Mannava to repaired blades in general, such as compressor blades, because of the general physical similarity of fan blades and compressor blades.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (703)-308-2638. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (703) 308-1044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.V.
February 9, 2004


Christopher Verdier
Primary Examiner
Art Unit 3745